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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 046,671	03 24 1998	MASATO TAKITA	P8077-8003	2422

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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/046,671

Applicant(s)

TAKITA ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicants admitted prior art in the instant application in view of Toge (U.S. 4,247,863).

In reference to claim 1, the prior art (Figs.29A-B) teaches a memory device including a lightly doped semiconductor substrate (114) of a first conduction type; a buried semiconductor layer of a second conduction type formed in a first region of the semiconductor substrate (114), spaced from a surface of the semiconductor substrate (114); a semiconductor region of the second conduction type (138) extending from the surface of the semiconductor substrate to a peripheral portion of the buried semiconductor layer, the semiconductor region of the second conduction type (138) being connected to the buried semiconductor layer; and a semiconductor region of the first conduction type (164) formed in the semiconductor substrate (114) surrounded by the buried semiconductor layer and the semiconductor region (138) of the second conduction type, the semiconductor region of the first conduction type (164) being isolated from the semiconductor substrate (114) by the buried semiconductor layer and the semiconductor region of the second conduction type (138) (page 4, line 13 – page 7, line 14).

The prior art fails to teach the semiconductor region of the first conductivity type has an equal concentration of impurity as that of the semiconductor substrate. However, Togei (Fig.3) in a related art to the formation of a MOS device teaches a semiconductor region of a first conductivity type (1a) formed in a semiconductor substrate (1) surrounded by a buried semiconductor layer (2) surrounded by isolation region (4), wherein a concentration of an impurity in the semiconductor region of the first conductivity type (1a) is equal to the concentration of an impurity in the semiconductor substrate (1) (column 2, lines 30 – 66 and column 4, lines 3 – 45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to form a semiconductor region as taught by Togei in the memory device of the prior art, since by doing so, the memory device would have improved speed due to an effective movement of carriers (column 4, lines 3 – 45).

In reference to claim 2, the prior art further includes a first semiconductor element formed in the first conduction type region; and a second semiconductor element formed in a second region different from the first region of the semiconductor substrate, wherein the first conduction type semiconductor region is connected to a first potential, and wherein the second region of the semiconductor substrate is connected to a second potential different from the first potential (Figs28-29B and page 4, line 13 – page 7, line 14).

In reference to claim 3, the prior art shows wherein the second conduction type semiconductor region is extended over a third region adjacent to the first region of the semiconductor substrate; wherein the semiconductor device further includes a third

semiconductor element formed in the third region of the second conduction type semiconductor region; and wherein the second conduction type semiconductor region is connected to a third potential different at least from the first potential or the second potential (Figs28-29B and page 4, line 13 – page 7, line 14).

In reference to claim 4, the prior art further includes a well of the first conduction type formed in a fourth region in the third region; and a fourth semiconductor element formed in the first conduction type well, wherein the first conduction type well is connected to a fourth potential different from at least the first potential (Figs28-29B and page 4, line 13 – page 7, line 14).

In re claims 5-7, the prior art further includes a first semiconductor element formed in the first conduction type region; and a second semiconductor element formed in a second region different from the first region of the semiconductor substrate, and that the second region of the semiconductor substrate is connected to a first potential, and wherein the second region of the semiconductor substrate is connected to a second potential different from the first potential. Applicants admitted prior art further teaches that the first semiconductor element and the second semiconductor element include a memory cell (Figs28-29B and page 4, line 13 – page 7, line 14).

Response to Arguments

3. Applicant's arguments filed 2/12/2003 have been fully considered but they are not persuasive.

In response to applicants arguments in page 5 of the amendment filed on 2/12/2003, lateral isolation region "4" corresponds to pn junction lateral isolation region

"138", which is disclosed as surrounded region "1a" and contacting region "2".

Therefore, the reference fairly suggests omitting doping of the substrate region on the prior art to form the FET structure of Fig.3 of Togeï.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

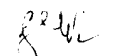
5. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the

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hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at (703) 308-0956.


JMR
4/16/03


George Foursor
Primary Examiner